A SEA STAR OF GENUS *CTENODISCUS* FROM TASMANIA

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Synopsis

A single specimen from deep water off northern Tasmania constitutes the first record of the sea star family Goniopectinidae from Australian waters.

Introduction

The sea star genus *Ctenodiscus* of the family Goniopectinidae is represented by two species in the Southern Hemisphere. *Ctenodiscus australis* Lütken is known from waters off the east coast of South America and *C. procurator*

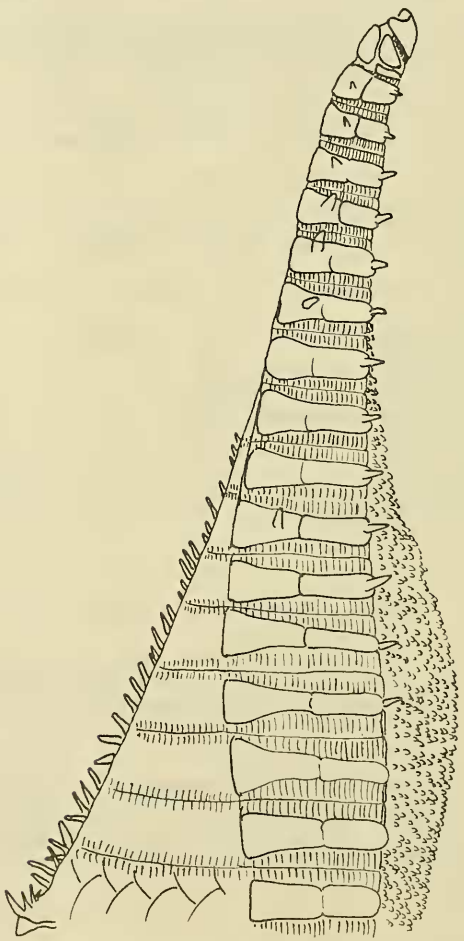

Fig. 1. *Ctenodiscus* sp. Side view from tip of ray to midline of the interradius.

Sladen from the west (Bernasconi, 1964). *Ctenodiscus orientalis* Fisher is tropical Indo-Malay in distribution and *C. crispatus* (Retzius) is an arctic-boreal form with a circumpolar distribution (D'yakonov, 1950).

The single specimen discussed here was taken on the 24th September, 1953, from the F.R.V. *Derwent Hunter* 45 miles E.N.E. of Stokes Point, King Island, in 300–240 fathoms (546–436 metres). I am grateful to Mr. A. M. Olsen, who collected the specimen, which is now housed in the collections of the Tasmanian Museum.

Ctenodiscus sp. (cf. *C. orientalis* Fisher)

One dried specimen. Tasmanian Museum Reg. No. H497. R=19·5 mm., r=8·0 mm., *br* at base of ray=7·0 mm., $R:r$ 2·43 : 1.

Description: A sea star with five pointed rays and deep interbrachial arcs. The aboral surface is flattened and the oral surface is inclined at a steep angle, the mouthplates being the lowest point (Fig. 1).

The actinal surface is covered with small paxillae that have no central spinelets and four to eight peripheral spinelets. Near the disc centre a small area (about 2·5 mm. across) is more closely covered with paxillae. This may be a retracted epiproctal cone.

The madreporite is some 2 mm. across and placed close to the margin. The furrows of the madreporite are roughly parallel and aligned along the radial axis of the body in which the madreporite lies.

The body is bordered by two rows of marginal plates forming an upright wall. Opposite inferomarginal and superomarginal plates are approximately equal in height, there being 16 marginals along the side of each ray. The largest pairs of inferomarginal and superomarginal plates are the third, fourth and fifth from the interradial line, the height of the marginal wall being reduced from those plates both to the tip of the ray and the mid-line of the interradius. Fascioles are present between all the marginal plates. The fasciolar spines are longer on the superomarginals and become progressively narrower along the borders of the inferomarginal plates. Each superomarginal plate carries a single pointed spine at its apex and 10 to 12 fasciole spinelets on each side. A single spine is present on most inferomarginal plates near to the upper edge. The terminal plates of this specimen are much abraded, but probably carry a single large spine either side of the terminal groove with a smaller spine set below and outside the former.

Fig. 2. *Ctenodiscus* sp. Mouth plate, proximal fascioles and adambulacral spinulation.

The fascioles run across the actinal surface to the ambulacrum. The fasciole in the mid-line of the interradius divides behind the mouth plates (Fig. 2). The actinal plates between the first fascioles from the mid-line are made up of two rows of overlapping, sub-rounded plates. The other actinal

plates are obscured by membrane. The adambulacral plates carry four to five furrow spines. Up to four spines may be present on the actinal surface of the adambulacral plates, amongst which a pair of spines may be distinct, especially near to the mouth. Occasional single spines are present on the actinal plates.

The mouth plates are prominent, carry three or four oral spines and between 10 and 12 suboral spines (Fig. 2). The innermost oral spines are the largest of that series. The second suboral spine is the largest of the suboral series.

The tube feet are in two rows, pointed and without sucking discs.

Discussion

The single specimen available is not adequate to confirm the existence of a further species of *Ctenodiscus*. However, some comparisons may be drawn with the species already ascribed to the genus. Sources of comparative information are given throughout the discussion.

The paxillae of the specimen described are similar to those described as characteristic of *C. procurator*, being less than 0·5 mm. in height and without central spinelets (A. M. Clark, 1962). Fisher (1911) demonstrated the morphological variability of *C. crispatus* and noted that the extremes of the paxillae and of body form of that species came within the variation shown by both *C. procurator* and *C. australis*. Fisher's table of measurements showed that 16 marginal plates were present in *C. crispatus* at *R* of approximately 36 mm. The specimen under discussion has 16 marginal plates at about half that size.

The number of furrow spines observed here comes well within the range given by Fisher for *C. crispatus*, i.e. three to five.

C. orientalis is the only other form known with a large number of marginal plates (26–27 when $R=52$ mm.) and the number of fasciole spinelets are similar to the Tasmanian specimen. Comparison with Fisher's (1919) figures of *C. orientalis* shows that the oral spinulation of the Tasmanian specimen differs from that species in that the second suboral spine is larger and there are more suboral spines (10–12 against 5–8). Fisher's figures also show that central spinelets are present on the paxillae of *C. orientalis*.

On the basis of size and numbers of marginal plates, this specimen has been referred to *Ctenodiscus orientalis* Fisher. A similar Indo-Malay relationship has already been inferred by A. M. Clark (1962) for a species of *Marginaster* from deep water off eastern Tasmania. A number of hypotheses are available to fit the distribution observed.

(1) All the attributed species of *Ctenodiscus* are but one species showing a wide range of morphological variation and bipolar distribution.

(2) Two species of *Ctenodiscus* exist with north and south polar distributions.

(3) The Tasmanian form shares its relationships with the tropical Indo-Malay fauna and is most closely related to *Ctenodiscus orientalis*.

Without further material available, I have chosen the latter hypothesis. The specimen is also of interest as it adds another family to the known Australian asteroid fauna.

References

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